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Monsanto



MONSANTO COMPANY
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6 July 1984

Mr. Edward J. Schwartzbauer
Dorsey, Windhorst, Hannaford,
Whitney, & Halladay
2200 First Bank Place East
Minneapolis, Minnesota 55402

Dear Mr. Schwartzbauer:

The following tables summarize all charges associated with the Dorsey and Whitney project for Reilly Tar and Chemical Corporation from September 1, 1983 through June 30, 1984.

The routine organics analyses are detailed as described in the letter provided to Mr. John C. Craun on 22 September 1982 and the 16 November 1982 letter to Dr. Gary Wilson, ERT.

Project associated charges for consultation, coordination and planning, travel, supplies and materials, non-routine analytical manhours and associated instrument hours are detailed on a man-hour and cost associated basis. All charges associated with this project are as described D. B. Nelson's letter to you of 6 July 1983.

This billing represents the completion of all analytical activities that Monsanto will perform on this project. Dr. B. Mason Hughes is coordinating the final disposition of project files, data, etc. Please contact him if you have further questions or information regarding the completion of the project. It has been a pleasure to have assisted in this project and to have worked

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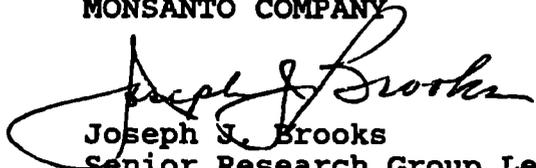
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6 July 1984

with you and the other members of the Reilly Team. We believe we have provided top-quality, timely data in a well-organized and understandable format. Our hope is that these data have adequately addressed all of your analytical needs. Thank you for your business.

Sincerely,

MONSANTO COMPANY



Joseph J. Brooks
Senior Research Group Leader
Ultratrace Analysis

DBN/aml
0224/B

Attachments

cc: Dr. Bill Roder
Reilly Tar & Chemical Corporation
1500 South Tibbs Avenue
P.O. Box 41076
Indianapolis, Indiana 46241

Mr. John C. Craun
Environmental Research & Technology, Inc.
Porter Bldg., 10th Floor
601 Grant Street
Pittsburgh, Pennsylvania 15219

105338

TABLE II. SUMMARY OF DORSEY & WHITNEY PROJECT "ROUTINE" EXTRACTIONS AND ORGANIC ANALYSES (1983)

PROJECT TASK NUMBER (P-B690-)	SAMPLE IDENTIFICATION	COST ELEMENT ^a /BILLING MONTH ^b								Total Phenol and TOC
		Extraction Number	A-1 ^c Extraction	A-2 PNA Screen	A-3 Wide Scan Screen	B-1 Coal Tar Quant.	B-2 PNA Quant.	A-3 VOA Screen	B-5 ^d VOA Quant.	
120	W-23 Background 10 mL-10 mL									284
120	W-23 Background 10 mL-1mL									285
120	DI water blank		2L							286
120	DI water blank		2L							287
120	HPLC water blank		2L							288
120	HPLC water blank		2L							289
120	W-70 duplicate stored 1 month		4L							290
120	Method Blank		4L							291
120	SLP-4		4L							292
120	Sample Bottle Wash		-							293
120	Sample Bottle Tape		-							294
120	Method Blank		4L							295
120	W-12 (45 min.)		4L							296
120	W-117 (25 min.)		4L							297
120	W-124 (119 min.)		4L							298
120	Schwartzbauer (100 min.)		4L							299
120	W-101 (40 min.)		4L							300
120	W-65 (80 min.)		4L							301
120	W-27 (45 min.)		4L							302
120	Orth. Alum. Corp. (100 min.)		4L							303

(Continued)

**SUMMARY OF BORINGS AND PIEZOMETER INSTALLATION BY GCA CORPORATION/TECHNOLOGY DIVISION -
REILLY TAR SITE, ST. LOUIS PARK, MINNESOTA**

No.	Elevation of L.S. (MSL)	Designation	Location	Type	Date completed	Piezometer	Perforated interval depth below L.S.	Total depth below L.S.	Depth to bedrock below L.S.	Drilling method	Sample type	No. of samples	Distance into bedrock	Depth over 60 ft	Comments
1	968.88	(ST1 (old)) PFI30	34th St & Minnehaha Creek	Clean Background Location	10/25/82	Yes	89.3' to 92.3'	93.5'	87.5'	Drive and wash	SS ^a ST ^b	21 0	6'	33.5'	Screen in bedrock
2	909.14	PFI37	34th St & Minnehaha Creek, ~0' E of PFI30	Clean Background Location	10/28/82	Yes	82.3' to 85.3'	86.5'	85.0'	Drive and wash	SS ST	2 6	1.5'	26.5'	Cleared utilities
3	907.46	PFI38	34th St & Xylon/Wyoming (next to water tower)	Clean Background Location	11/2/82	Yes	63.5' to 66.5'	78.5'	77.8'	Drive and wash	SS ST	17 2	7' 2.5'	18.5'	Cleared utilities
4	893.07	PFI39	Dead end of Quebec at 31 St'	Reilly Tar Site Solid Ground	11/4/82	Yes	59.0' to 62.0'	67.5'	63.5'	Drive and wash	SS ST	16 1	4'	7.5'	Cleared utilities
5	893.00	PFI40	Louisiana Av. next to #23	Reilly Tar Site Solid Ground	11/10/82	Yes	65.7' to 68.7'	71.0'	~70.0'	Drive and wash	SS ST	17 1	1'	10'	Cleared utilities
6	890.11	PFI42	Walker Av. & Louisiana Av. Ext.	Reilly Tar Site Solid Ground	11/12/82	No	-	64'	63.7'	Augered	SS ST	14 1	-	4'	Cleared utilities
7	914.00	PFI41	On Highway 7 overpass west of Louisiana Av. exit	Reilly Tar Site Solid Ground	11/15/82	No	-	65'	-	Augered	SS ST	13 0	-	5'	Roadway signs special materials
8	895.11	PFI44	Filled Swamp S of Highway 7 164' W of W13	Reilly Tar Site Solid Ground	11/19/82	Yes	44.3' to 47.3'	59'	51' (?)	Drive and wash	SS ST	13 1	8'	-	Cleared utilities

^aSplit Spoon Sampler.
^bThin wall Shelby Tube Sampler.

SUMMARY OF PAH ANALYSIS AT REILLY TAR SITE FOR SAMPLES TAKEN DURING OCTOBER-NOVEMBER 1982
BY GCA/TECHNOLOGY DIVISION

mg/kg = ppm

$10^{-3} / 10^3 = 10^{-6}$

Compound	Sample No. - Type										PB-130				PB-135				
	PB-136ST-1, 03	PB-136ST-1, 04	PB-136ST-1, 05	PB-136ST-1, 06	PB-136ST-1, 010	PB-136ST-1, 014	PB-136ST-1, 019	PB-136ST-1, 020	PB-136ST-1, 021	PB-136ST-1, 022	03	07	10	11	12	15	16	17	18
	fibrous peat p = 5' b1a	nonfibrous peat p = 11' b1a	nonfibrous peat p = 8' b1a	gray till p = 13' b1a	outwash p = 33' b1a	gray till p = 23' b1a	sand p = 18' b1a	sand p = 43' b1a	weathered bedrock p = 87' b1a	03	gray till p = 19' b1a	outwash p = 24' b1a	outwash p = 4' b1a	outwash p = 4' b1a	acid sulfate clay p = 74' b1a	03	07	10	11
Naphthalene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.49	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3*	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acridine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.87	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1*	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz(a,h)anthracene	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*	ND*

ND = 0.5 mg/kg 0.2 mg/kg
ND* = 2.0 mg/kg 0.8 mg/kg

Concentrations in mg/kg
*Reported value is total concentration of the two coeluting compounds.

What?

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Sample No. P/Type

Compound	PB-140 #2		PB-140 #4		PB-140 #6		PB-140 #16		PB-140 #18		PB-140 #20		PB-140 #22		PB-140 #24		PB-140 #26		PB-140 #28		PB-140 #30		
	black fine sand fine bis fine bis	black/ brown sand fine bis fine bis	black fine sand fine bis fine bis																				
Impurities	400	4.4	1.2	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
Acenaphthylene	56	0.53	ND	0.47	ND																		
Acenaphthene	120	0.63	ND	62	ND																		
Fluorene	350	2.1	ND	43	ND																		
Fluoranthrene	910 ^a	10.5 ^a	0.75 ^a	140 ^a	ND																		
Anthracene	-	-	-	-	ND																		
Acridine	ND	ND	ND	2.6	ND																		
Carbazole	66	0.54	ND	4.0	ND																		
Fluoranthrene	600	6.7	0.63	73	ND																		
Pyrene	480	5.1	0.36	51	ND																		
Benzo(a)anthracene	460	4.0 ^a	0.36 ^a	32	ND																		
Benzo(k)fluoranthene	300 ^a	2.3	ND	16 ^a	ND																		
Benzo(a)pyrene	210	1.3	ND	5.6	ND																		
Dibenz(a,h)anthracene	43	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a	ND ^a

ND = 0.2 mg/kg
 ND^a = 0.8 mg/kg
 Concentrations in mg/kg
 Reported value is total of the two coeluting compounds.

Compound	Sample No./Type			
	FB-144 #2	FB-144 #3	FB-144 #5	FB-144 #7
	top soil @ ≈ 6' bls	fibrous peat @ ≈ 14' bls	nonfibrous peat @ ≈ 19' bls	outwash @ ≈ 29' bls
Naphthalene	1.2	3.4	ND	6.6
Acenaphthylene	ND	0.73	ND	ND
Acenaphthene	0.24	0.46	ND	0.65
Fluorene	0.24	0.50	ND	0.45
Phenanthrene	1.1 ^a	4.8 ^a	ND	0.93
Anthracene	-	-	ND	-
Acridine	ND	0.28	ND	ND
Carbazole	ND	0.53	ND	0.24
Fluoranthene	0.53	4.3	ND	ND
Pyrene	0.40	3.8	ND	ND
Benzo(a) anthracene	0.34 ^a	6.2	ND	ND
Benzo(k) fluoranthene	ND	11.7 ^a	ND	ND
Benzo(a) pyrene	ND	14.5	ND	ND
Dibenzo(a,h) anthracene	ND*	1.5	ND*	ND*

ND = 0.2 mg/kg ----- 0.5 mg/kg 0.2 mg/kg

ND* = 0.8 mg/kg ----- 2.0 mg/kg 0.8 mg/kg

Concentrations in mg/kg

^aReported value is total of the two coeluting compounds.